Draft

Work Plan
Radiological Survey and Sampling

Former Hunters Point Naval Shipyard
San Francisco, California

Department of the Navy
Naval Facilities Engineering Command
Base Realignment and Closure
Program Management Office West

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Table 4-3 Number of Samples in a Survey Unit

Label	Ra-226	Cs-137
α & β	0.01	0.01
MARSSIM Table 5-3 values	18	18

Notes:

The release criteria at HPNS (Navy, 2006) are incremental concentrations above background.

MARSSIM Table 5-3 lists the minimum number of samples that will be collected in a survey unit, and an equal number of samples will be collected in a background reference area.

DCGL = derived concentration guidance level. A derived, radionuclide-specific activity concentration within a survey unit corresponding to the release criterion.

α & β are the Type I and Type II decision error rates, respectively.

Because of the varying uncertainty often associated with the standard deviations (σ) that will be obtained at the end of sampling events, the surveys are designed with a minimum of 18 samples for each survey unit and each background reference area. This design is needed because the data describing the final radiological conditions for a specific area will not be available until the samples have been collected, analyzed, and validated. For this reason, conservative estimates of σ were used to estimate the minimum number of samples needed based on available data for Ra-226 and Cs-137. Insufficient data were available to calculate the minimum number of measurements per survey unit based on other ROCs.

4.4 Building Survey Areas

Radiologically impacted buildings will be divided into survey units based on information in the CSM (**Section 2**) and other site-specific information. The building investigation protocols are described in greater detail in **Section 5.4.1** and will be documented in TSPs by parcel or by building. Evaluation of building data is described in **Section 6**.

4.4.1 Building Contamination Potential

Building survey units will be initially classified based on information in the CSM (**Section 2**) describing the potential for radiological contamination as presented in **Table 4-4**. Definitions for survey classes in this Work Plan derived from MARSSIM glossary definitions are provided on **Figure 4-3**. Buildings with moderate contamination potential might be expected to contain a higher proportion of Class 1 and Class 2 survey units than would buildings with low or no contamination potential. All buildings will be investigated for residual radioactivity via alpha-beta scans and biased and systematic static measurements and swipes. Systematic and biased static measurements will be used to validate the survey unit classification before conducting alpha-beta scans to ensure that adequate scan coverage is achieved. Remediation will be performed, if necessary, the survey unit classification re-evaluated, and any additional data collected and evaluated for the final status survey reports.

Table 4-4. Buildings and Associated HRA Contamination Potential

Parcel	Moderate Contamination Potential	Low or No Contamination Potential
A, D-2, UC-1		Buildings 322, 813, 819
B		Buildings 103, 113, 113A, 130, 140, 146
C		Buildings 203, 214, 241, 271, 272
E	Buildings 406, 810	Buildings 414, 521